The Impact of Mother-Infant Bonding on Periodontal Health Status in the Postpartum Period

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ABSTRACT

Background: Mother-infant bonding is an important psychological step postpartum and disturbed relationship may carry dramatic consequences as a psychological disorder which may affect the periodontal health of the mother. The aim of the present study was to assess the effect of the postpartum Mother-infant bonding on their periodontal condition.

Materials and Methods: Mothers in the postpartum period with age range 20-35 years were subjected to postpartum Bonding Questionnaire (PBQ). Periodontal health status was assessed by measuring probing pocket depth and clinical attachment level.

Results: The mean values of both probing pocket depth (PPD) and clinical attachment loss (CAL) were higher among disordered mothers than mothers with normal bonding relationship. The mean percentage of PPD according to different thresholds of severity and CAL (1-2 mm) was higher among the disordered mothers.

Conclusion: Mother-infant bonding disorder could influence the periodontal health status of the mother.

Key words: Mother-infant bonding, periodontal health, postpartum. **(J Bagh Coll Dentistry 2018; 30(1): 76-79)**

INTRODUCTION

In the postpartum period, the initiation and progression of the connection between the mother and her infant is an important psychological step that presented as a challenge to the mother. Bonding is the term usually used to describe this relationship [1]. The negative response of the mother toward the infant's stimuli is called 'Maternal bonding disorder [2]. There are many manifestations of bonding disorder: delay, ambivalence or loss in maternal response, threatened or established rejection, pathological anger, and infant abuse [3]. The attachment theory that was constructed by Bowlby [4] proposed that the person requires or needs to form an affectionate connection with a caregiver (mainly the mother) from the unborn phase and as getting older and this emotional requisite is beyond the feeding needs. As a child, these psychological actions are wanted to create comforting, protecting, warm, and loving feelings. Some factors have the potential to create barrier that affect the bonding process which include a lack of support, the riskiness of the pregnancy, maternal fatigue, and lack of confidence in parenting abilities [5], other factors that influence negatively or positively the bonding relationship include: pattern of infant feeding [6], depression [7], separation of the premature infant from the mother after birth [8,9], and others. The quality of the maternal-newborn relationship can have a significant impact on the mother's mental health and newborn's well-being, development, and adaptation throughout life [10].

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Several questionnaires have been produced to evaluate the bonding status, even though the postpartum bonding questionnaire (PBQ) which is introduced by Brockington *et al*. had been largely studied regarding the validity and reliability which was easy to be applied [11,12].

Periodontal disease is a term used to describe spectrum of diseases that are caused by infection and inflammatory response which affect the gingiva and the supporting bone and it is one of the two major oral diseases that affect human populations across the world with high progression rate [13,14]. Many studies had attempted to evaluate the relationship between psychosocial factors and periodontal disease development [15]. Stress, depression, ineffective coping, and anxiety negatively affect the periodontal health [16]. On the other hand, increase the psychological perception of social environment as not stressful is associated with positive oral health attitudes and accordingly good periodontal health [17].

MATERIALS AND METHODS

The selected sample composed of 100 mothers aged 20-35 years. The participants were informed about the aim of the study and were freely allowed to accept the examination. Informed consent and ethical approval had been obtained. The participants were selected and examined in health centers of Baghdad city (Karkh Sector). Exclusion criteria involved mothers who were on contraceptive pills or other medications, pregnancy, smoking, and systemic diseases.

The Postpartum Bonding Questionnaire (PBQ) was used to estimate the mother-infant bonding relationship status. The PBQ has twenty-five statements, each followed by 6 alternative replies

which are: always, very often, quite often, sometimes, rarely, and never. Positive replies such as ''I enjoy playing with my baby'', are scored from 0 (always) to 5 (never). Negative replies such as ''I am afraid of my baby'', are scored from 5 (always) to 0 (never). A high score signals pathological condition. The questionnaire has four factors: general factor, rejection and pathological anger, anxiety about the infant, and incipient abuse [18]. In this study, a total score of 19 attained the maximum split between mothers with normal mother-infant relationship and those with some type of disorder, the total scores of all items of the questionnaire has a maximum of 125 but in this sample the range was 0-51, with a median of 18.

The questionnaire was translated to Arabic language and conformation of translation was obtained and prepared to be used in Iraq. The mothers who attended the health centers were asked to complete all components of the Postpartum Bonding Questionnaire by themselves without assistance or discussing the answers with others.

Oral examinations were done under standardized conditions according to the basic methods of oral health surveys of World Health Organization [19]. The pocket depth was measured using calibrated periodontal probes (William's probes) at four surfaces of all examined teeth except the third molars. The sites for measurements were mid-buccal, mid-palatal, mesiobuccal and distobuccal lines. A scale was used for ease of estimation [20]:

Score 0	1-3 mm
Score 1	4-5 mm
Score 2	6 mm and greater

The attachment loss was measured by using the periodontal probe at four sites for all examined teeth except third molar by:

1. Measuring the distance from the free gingival margin to the cemento-enamel junction.
2. Measuring the distance from free gingival margin to the bottom of the sulcus or pocket at each site. The interproximal recording should be secured at the buccal aspect of the interproximal contact.
3. The attachment loss was obtained from subtracting the first measurement from the second one.
4. Recession was recorded as a negative value that means the attachment loss was obtained from adding the first measurement to the second one.

Clinical attachment loss readings were divided into 3 scores [21,22]:

Score 1	1-2 mm
Score 2	3-4 mm
Score 3	5mm and greater

RESULTS

The participants of the study were composed of 53 mother with normal mother-infant bonding status and 47 mothers with disorder in mother-infant bonding status. The data of the current study revealed a statistically significant difference in mean values of probing pocket depth (PPD) among disordered and normal mothers concerning bonding status with higher mean value among the disordered mother as shown in table 1.

Extent (mean percentage of sites) of periodontal pocket depth according to different thresholds of severity among disordered and normal mothers is illustrated in table 2. The mean percentage of both PPD score 1 and PPD score 2 thresholds was found to be higher among disordered mothers than normal mothers in spite of non-significant difference in the mean value of score 2 between the two groups.

Results concerning clinical attachment level (CAL) demonstrates that the difference in the mean value wasn't significant, however the mean of CAL thresholds was higher among the disordered mothers.

The extent of clinical attachment level (mean percentage) with different thresholds of severity among disordered mothers and normal mothers is seen in table 4. CAL with score 1 has a higher mean percentage among disordered mothers with significant difference statistically. Results exhibited that the mean percentage of CAL score 2 was lower among disordered mother, even though the difference wasn't significant statistically.

Table 1: Probing pocket depth (mean) among disordered and normal mothers.

Mother-infant bonding status	Mean	±SE	T	P-value
Disorder	3.63	0.24	4.20	0.00
Normal	1.98	0.30		

Table 2: Extent (mean percentage) of periodontal pocket depth with different thresholds of severity in relation to mother-infant bonding status.

PPD Scores	Mother-infant bonding status	Mean	±SE	T	P-value
PPD score 1 (4-5)	Disorder	4.63	0.54	5.82	0.00
	Normal	1.19	0.23		
PPD score 2 (≥6)	Disorder	0.28	0.16	0.66	0.51
	Normal	.17	0.07		

Table 3: Clinical attachment level (mean) in relation to mother-infant bonding status.

Mother-infant bonding status	Mean	±SE	T	P-value
Disorder	0.87	0.07	0.54	0.58
Normal	0.78	0.14		

Table 4: The extent of clinical attachment level (mean percentage) with different thresholds of severity in relation to mother-infant bonding status

CAL Scores	Mother-infant bonding status	Mean	±SE	T	P-value
CAL1 (1-2)	Disorder	4.14	0.46	3.80	0.00
	Normal	1.89	0.36		
CAL2 (3-4)	Disorder	0.00	0.00	1.76	0.08
	Normal	0.10	0.05		

DISCUSSION

Since there are no previous available Iraqi studies concerning the relationship between mother-infant bonding and periodontal health status, this study was conducted to investigate the impact of maternal bonding on periodontal health.

Advanced periodontal disease is a persistent bacterial infection causing chronic inflammation in periodontal tissues which is characterized by formation of pathological periodontal pockets concomitantly with destruction of periodontal ligament fibers attaching teeth to the alveolar bone [23]. Psychological status has an influence on periodontal health condition and the attachment pattern that affects periodontal disease [24]. This also could be seen in the present study as the results reported a higher mean value of probing pocket depth and clinical attachment loss scores among disordered mothers. The reasons behind the effect of psychological factors on periodontal health might be attributed to: 1) behavioral factors which may aggravate certain lifestyle that are known to increase the likelihood of periodontal disease (e.g., neglect of oral hygiene, and changes in diet), 2) direct pathophysiologic effects on host defense [25]. Other explanation may be attributed to the level of Oxytocin hormone which has a potential role in the onset of maternal behavior (mother-infant bonding) [26]. Oxytocin hormone inducement in response to infant's stimuli decreases the stress reaction [27], cortisol level, and anxiety [28], meanwhile stress in turn has detrimental sequels on the health of oral tissues [29]. In addition, Oxytocin hormone contributes generally to wound healing process [30], as it reduces the release of Interleukin-6 which is involved in the inflammatory process [31].

On conclusion, the maternal bonding disorder influences the periodontal health status of the mother, so recognition and identification of the bonding status would allow psychological intervention to improve the oral health of the mother. However, further studies are needed to determine the effect of biomarkers in relation to bonding status of the mother to investigate the exact impact of the bonding disorder on the oral health status.

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الخلاصة

خلفية: رابطة ألام والطفل هي خطوة نفسية مهمة في فترة مابعد الولادة وأي تخلخل في هذه العلاقة كأضطراب نفسي من الممكن أن تحمل عواقب تؤثر على صحة أنسجة ماحول ألاسنان عند ألام. الهدف من الدراسة الحالية هو تقييم تأثير رابطة الام والطفل مابعد الولادة على صحة أنسجة ماحول الاسنان عند ألام.

المواد والطرق: ألامهات بنطاق عمر ٢٠ الى ٣٥ سنة في فترة مابعد الولادة عرض عليهن أستبيان رابطة مابعد الولادة. حالة صحة أنسجة ماحول ألاسنان قيمت عن طريق قياس عمق جيب اللثة و ومستوى انحسار اللثة.

النتائج: قيم معدل عمق جيب اللثة ومستوى انحسار اللثة كانت أعلى بين ألامهات أللاتي يعانين من اضطراب في علاقة الام والطفل من ألامهات اللاتي يتصفن بعلاقة طبيعية. نسبة معدل عمق جيب اللثة بالنسبة الى حدة الحالة و مستوى انحسار اللثة بين ١ و ٢ ملم كانت أعلى بين ألامهات اللاتي يعانين من الاضطراب.

ألاستنتاج: أضطراب علاقة الام والطفل من الممكن أن تؤثر على صحة أنسجة ماحول ألاسنان عند ألام.

الكلمات المفتاحية: رابطة ألام والطفل, صحة أنسجة ماحول ألاسنان, بعد الولادة.